

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A method of forming a microelectronic structure comprising;
forming a diamond layer on a substrate, wherein the diamond layer
comprises defects; and
forming pores in the diamond layer by removing a substantial amount
of the defects from the diamond layer.
2. (Original) The method of claim 1 wherein forming pores in the diamond
layer comprises reducing the dielectric constant of the diamond layer by forming
pores in the diamond layer.
3. (Original) The method of claim 1 wherein forming a diamond layer on a
substrate comprises forming a diamond layer on a substrate by chemical vapor
deposition.

4. (Original) The method of claim 1 wherein forming a diamond layer on a substrate comprises exposing the substrate to a gas comprising a hydrocarbon and hydrogen, wherein the hydrocarbon concentration is above about 10 percent of the hydrogen concentration.
5. (Original) The method of claim 4 wherein exposing the substrate to a gas comprising a hydrocarbon comprises exposing the substrate to a gas comprising methane.
6. (Original) The method of claim 1 wherein forming a diamond layer on a substrate comprises forming a diamond layer on a substrate wherein the diamond layer comprises at least one of double bonds, vacancies or interstitials.
7. (Original) The method of claim 1 wherein removing the defects from the diamond layer comprises etching the defects from the diamond layer.
8. (Original) The method of claim 7 wherein etching the defects comprises exposing the defects to oxygen gas at a temperature below about 450 degrees Celsius.
9. (Original) The method of claim 7 wherein etching the defects comprises exposing the defects to oxygen gas and utilizing a rapid thermal anneal process.

10. (Original) The method of claim 7 wherein etching the defects comprises exposing the defects to at least one of a hydrogen plasma or an oxygen plasma.
11. (Original) The method of claim 10 wherein exposing the defects to a hydrogen plasma comprises reducing the coefficient of friction of a top surface of the diamond layer by passivating the top surface of the diamond layer with hydrogen.
12. (Original) The method of claim 1 wherein forming a diamond layer comprises forming the diamond layer in a deposition chamber of a cluster tool.
13. (Original) The method of claim 1 wherein forming pores in the diamond layer comprises forming pores in the diamond layer in an oxidation chamber of a cluster tool.
14. (Original) The method of claim 1 further comprising:
forming a second diamond layer on the diamond layer in a deposition chamber of a cluster tool: and
forming pores in the second diamond layer in an oxidation chamber of the cluster tool.

15. (Original) A method of forming a microelectronic structure comprising:
- forming a first diamond layer on a substrate, wherein the first diamond layer comprises a mixture of sp^2 bonds and sp^3 bonds; and
- exposing the first diamond layer to a hydrogen plasma, wherein the sp^2 bonds are substantially removed from a top portion of the first diamond layer.
16. (Original) The method of claim 15 wherein forming a first diamond layer comprises forming a first diamond layer by utilizing a plasma comprising a concentration of methane that is above about 10 percent of a concentration of hydrogen.
17. (Original) The method of claim 15 wherein exposing the first diamond layer to a hydrogen plasma comprises converting the top portion of the first diamond layer to form a substantially sp^2 free diamond layer by exposing the first diamond layer to a hydrogen plasma.

18. (Original) The method of claim 15 further comprising forming a second diamond layer disposed on the substantially sp² free diamond layer, wherein the second diamond layer comprises a mixture of sp² and sp³ bonds, by utilizing a plasma comprising a concentration of methane that is above about 10 % of a concentration of hydrogen.

19-31. (Cancelled)